

ABSTRACT

The present invention relates to an apparatus for heating a sample, such as chemical reaction mixtures, whose dielectric properties varies during the heating process. In particular, the present invention relates to a microwave heating apparatus comprising a 5 microwave generator, a waveguide for guiding the generated microwaves to an applicator, and a deflector formed by a closed loop defining a plane, said deflector having an inherent resonance frequency and a thickness in a direction normal to said plane, the deflector being rotatable around an axis being at least substantially parallel to said plane, the deflector being positioned in the waveguide so as to form a resonant cavity with the 10 sample and the waveguide applicator. The resonance conditions of the resonant cavity and the coupling factor of radiation from the waveguide to the cavity are easily adjustable by rotation of the deflector. The resonance conditions and the coupling factor can be adjusted in response to the dielectric properties of the sample in order to optimise the amount of absorbed power and thereby obtain control of the sample heating process.